

AMENDMENTS TO THE CLAIMS

The following listing of claims will replace all prior versions and listings of claims in the application.

LISTING OF CLAIMS

1. (Currently Amended) An engine exhaust sensor diagnostic system, comprising:

an inlet oxygen sensor; and

a controller that monitors a signal generated by said oxygen sensor, determines a rate of change of said signal, computes at least one diagnostic parameter based on said rate of change, and indicates a malfunction of said oxygen sensor if said diagnostic parameter is below a corresponding threshold, wherein said controller classifies said rate of change into one of a positive class, a negative class and an excluded class.

2. (Original) The system of claim 1 wherein said controller indicates proper function of said oxygen sensor if said diagnostic parameter is above said threshold.

3. (Cancelled)

4. (Currently Amended) The system of claim 1 ~~3~~ wherein said excluded class rate of change is ignored.

5. (Currently Amended) The system of claim 1 ~~3~~ wherein said threshold includes negative class thresholds and positive class thresholds and wherein a positive

class diagnostic parameter is compared to said positive class thresholds and a negative class diagnostic parameter is compared to said negative class thresholds.

6. (Original) The system of claim 5 wherein said controller indicates a positive class malfunction if said positive class diagnostic parameters are below said positive class thresholds and indicates a negative class malfunction if said negative class diagnostic parameters are below said negative class thresholds.

7. (Original) The system of claim 5 wherein said controller indicates proper positive class function if said positive class diagnostic parameters are above said positive class thresholds and indicates proper negative class function if said negative class diagnostic parameters are above said negative class thresholds.

8. (Currently Amended) A method of monitoring operability of an oxygen sensor, comprising:

monitoring a signal generated by said oxygen sensor;

determining a rate of change of said signal;

classifying said rate of change into one of a positive class, a negative class and an excluded class;

computing diagnostic parameters based on said rate of change; and

indicating malfunction of said oxygen sensor if said diagnostic parameters are below corresponding thresholds.

9. (Original) The method of claim 8 further comprising indicating proper function of said oxygen sensor if said diagnostic parameters are above said thresholds.

10. (Cancelled)

11. (Currently Amended) The method of claim 8 ~~40~~ wherein said rate of change classified in said excluded class is ignored.

12. (Currently Amended) The method of claim 8 ~~40~~ wherein said thresholds include negative class thresholds and positive class thresholds and wherein negative class diagnostic parameters are compared to said negative class thresholds and positive class diagnostic parameters are compared to said positive class thresholds.

13. (Original) The method of claim 12 further comprising:

indicating a positive class malfunction if said positive class diagnostic parameters are below said positive class thresholds; and

indicating a negative class malfunction if said negative class diagnostic parameters are below said negative class thresholds.

14. (Original) The method of claim 12 further comprising:

indicating proper positive class function if said positive class diagnostic parameters are above said positive class thresholds; and

indicating proper negative class function if said negative class diagnostic parameters are above said negative class thresholds.

15. (Original) A method of diagnosing operability of a sensor, comprising:
- monitoring a signal generated by said sensor;
 - determining a rate of change of said signal;
 - classifying said rate of change in one of a positive class, a negative class and an excluded class;
 - computing diagnostic parameters for each of said classes based on said rate of change;
 - indicating malfunction of said sensor if said positive class diagnostic parameters are below positive class thresholds; and
 - indicating malfunction of said sensor if said negative class diagnostic parameters are below negative class thresholds.
16. (Original) The method of claim 15 wherein said excluded class rate of change is ignored.
17. (Original) The method of claim 15 further comprising:
- indicating proper positive class function if said positive class diagnostic parameters are above said positive class thresholds; and
 - indicating proper negative class function if said negative class diagnostic parameters are above said negative class thresholds.